Paris-Berlin-Vienna triangle: locomotive of the world economy

The following document grows out of a series of policy statements by Lyndon LaRouche, candidate for U.S. Congress in the Tenth District of Virginia, concerning the future of Europe. His proposal forms the core of the economic policies which LaRouche intends to implement upon his taking office in Washington. It was first aired in his Berlin declaration of Oct. 12, 1988, and was later expanded upon in his October 1989 call for an European East-West fast-rail axis, and recent proposals concerning the "Paris-Berlin-Vienna triangle."

The present outline was elaborated according to LaRouche's specifications by an international working group sponsored by the Schiller Institute. Additional materials are available and in preparation which develop more fully various aspects of this outline.

Introduction

You have in your hands the essential elements of a program to make the triangular area between Paris, Berlin, and Vienna into the center of the world economy by the year 2000. The cornerstone of the program is to establish an integrated, computerized high-speed rail system for freight and passenger transport throughout the region. By focusing investment into this and a few other crucial areas of industrial infrastructure, we transform the Paris-Berlin-Vienna triangle into the greatest concentration of productive economic power the world has ever seen.

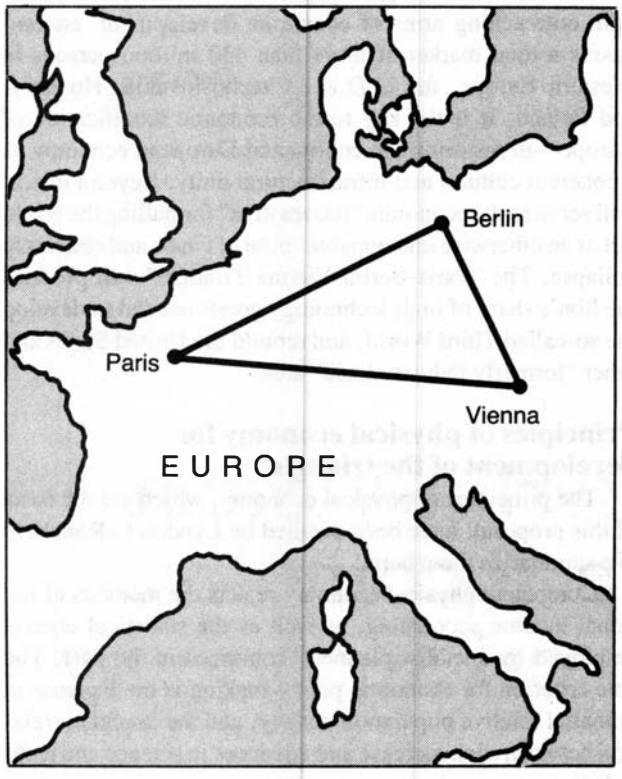
This program is economically and historically necessary.

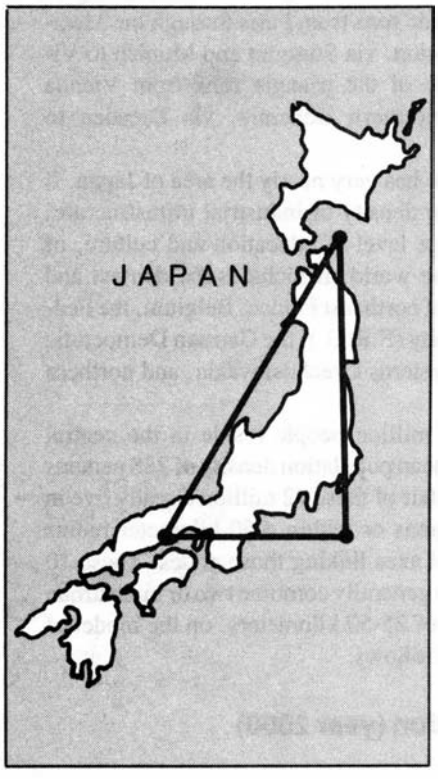
The world is presently going into the deepest depression of the twentieth century.

In the West, Adam Smith's so-called "free market system" has destroyed the economy of United States. The combination of Volcker interest rate measures, deregulation of banking and other sectors, and pursuit of "ecological" and "post-industrial society" policies under Carter, Reagan, and now Bush, has turned

FIGURE 1

The European development triangle compared to Japan's industrial triangle





Lyndon H. LaRouche, shown on Oct. 12, 1988, in Berlin, when he launched his plan to rescue the Polish economy and achieve German reunification.

yesterday's leading industrial economy into a virtual junkyard today. America's productive base has shrunk to the point, where it no longer possesses the resources to accomplish its own recovery. Great Britain, too has been transformed into a largely "post-industrial" society. All that remains of any economic soundness is in continental central Europe, Japan, and a few smaller countries, such as the Republic of China (Taiwan) and South Korea.

With few exceptions, the developing sector nations are in their economic death struggles. Increasingly over the last twenty years, they have been victims of the same "free market" practices which the East India Company employed in its genocidal looting of Asia during the nineteenth century. The new name for this is the "conditionalities" policy of the International Monetary Fund and World Bank. As a consequence, entire areas of the Third World, and central Africa in particular, are now threatened with depopulation.

In the East, the failures of the communist system, aggravated by Gorbachov's and others' experiments with the "free market system," have caused a precipitous collapse of the economies of the Soviet Union and of the nations it has subjugated and looted for the last forty years. Here, too, the means required to escape from an endless spiral of physical collapse must come from outside the Soviet empire and its Comecon victims. The only hope lies in those remaining islands of economic productivity in the world, which have not been ruined by the two-headed monster of Karl Marx and Adam Smith.

To recover from this global crisis demands a return to what used to be called the American System. Before that, it was known as Leibnizian physical economy, Leibniz's improvements on Colbertism. It was developed under the name of the "American System" by Friedrich List, and is the organic outgrowth of Western European Christian civilization. This is what we must return to.

We must have a common approach to mobilize the now very scarce resources to save the world economy. To do this, we must develop very quickly, in addition to Japan, a center of output which can rescue the world economy from collapse. That center must be in continental Europe. Its core is the triangular region spanned between Paris, Berlin, and Vienna. This area will develop, over the next five to ten years, the highest density of physical economic activity ever to be realized on the surface of this planet.

The Paris-Berlin-Vienna triangle: a 'European Japan'

The central region is a curvilinear triangle with corners at Paris, Berlin, and Vienna (**Figure 1**). The sides of this triangle are at the same time great infrastructural axes of

rapid freight and passenger transport. The northern side runs from Paris through the steel region around Lille/Charleroi, through the Ruhr region of Germany via Braunschweig to Berlin. The Southern side runs from Paris through the Metz-Nancy-Saarbrücken region, via Stuttgart and Munich to Vienna. The eastern side of the triangle runs from Vienna through Prague and northern Bohemia, via Dresden to Berlin.

This central triangle has very nearly the area of Japan. It already has the greatest density of industrial infrastructure, and the greatest average level of education and culture, of any major region of the world. It includes the densest and most productive areas of northeast France, Belgium, the Federal Republic of Germany (F.R.G.), the German Democratic Republic (G.D.R.), westerns Czechoslovakia, and northern Austria.

Approximately 92 million people reside in the central triangle today, with a mean population density of 288 persons per square kilometer. Half of these 92 million already live in 10 great industrial regions or within a 50-kilometer radius of major infrastructural axes linking those nodes. These 10 industrial nodes, which generally combine two or more urban centers inside a radius of 25-50 kilometers, on the model of the Ruhr region, are as follows:

Projected population (year 2000)

Paris region	8 million
Lille-Charleroi region	3 million
Ruhr region	10 million
Metz-Nancy-Saarbrücken region	1.5 million
Rhine-Main-Neckar region	2.5 million
Stuttgart region	2 million
Muunich region	2 million
Berlin region	4 million
Leipzig-Zwickau-Dresden region	3.5 million
Vienna-Bratislava region	2 million
Prague-Plzen-North Bohemia region	3 million
Projected population of these centers:	41.5 million

The densification of infrastructure within the central triangle creates entire corridors and nodal regions of development (**Figure 2**). Here ideal conditions are generated for the emergence of new cities, such as a new "Leibniz City" to be built on the present F.R.G.-G.D.R. border, at the convergence of the corridors linking the Ruhr, Rhine-Main, and Munich regions with Leipzig-Zwickau-Dresden.

Spinning off from this central triangle, are great infrastructure corridors linking it to the entirety of Europe. One arm reaches out from Berlin to Warsaw, and down to the Polish industrial center of Krakow-Katowice; another reaches up through Hamburg to Scandinavia; another via Paris to the rest of France and Spain; another via Basel into Italy; another via Vienna to Budapest, and so on.

Like a giant spiral galaxy, this system of a dense center with outreaching arms of economic development, encompasses a total market of more than 430 million persons in Western Europe, the G.D.R., Czechoslovakia, Hungary, and Poland. It is the key to the economic reunification of Europe—to restoring the continental European economy as a coherent cultural and infrastructural unity. Beyond this, it will serve as the economic "locomotive" for pulling the world out of an otherwise unstoppable spiral of chaos and economic collapse. The "Paris-Berlin-Vienna Triangle" will produce the lion's share of high-technology goods needed to develop the so-called Third World, and rebuild the United States and other "formerly industrialized" areas.

Principles of physical economy for development of the triangle

The principles of physical economy, which are the basis of this proposal, have been detailed by Lyndon LaRouche.* We summarize them here.

Competent physical economy rejects the methods of national income accounting, as well as the statistical criteria employed by socialist planned economies in the past. The sole criterion for economic policy-making is the increase in potential relative population density, and the lawful correlation between such increase and advances in science and technology.

Leaving aside the insane European Community policies designed to dismantle agriculture, steel, and other productive capacities, our central triangle could support more than four times its present population density—based upon existing technology. Successful maintenance of an economy requires, however, that we continually increase the potential population density. This does not mean that the actual population increases in the same proportion, but rather that the per capita power of the population, to maintain itself at an increasing material quality of existence and productive power, must grow.

It is that continually increasing power—that increasing potential population density of the Paris-Berlin-Vienna triangle—which, translated into the production and export of high-technology capital goods, will provide the basis for global economic recovery. For this to succeed, the following fundamental criteria must be fulfilled:

1) Technology must advance.

Scientific and technological progress is the source of all growth in the productive powers of labor. Such progress occurs through creative discoveries of individual human minds, and the assimilation and embodiment of such new discoveries in the productive practice of the entire economy. Under

* Most recently, in his *In Defense of Common Sense*, Schiller Institute, Washington, D.C., 1989.

the present parameters of technology, achievement of necessary rates of technological progress requires that the portion of the labor force employed in scientific research and development must be increased from present levels (1.4% in the F.R.G.) to no less than 5%, and preferably closer to 10% over the next decade. In addition, a minimum of 50% of the workforce must be employed in the productive sectors of the economy (compared with 45% in the F.R.G. today, 36% in France, and less than 30% in the United States). This means abandoning the "post-industrial" policies of the European Commission, which are designed to transfer more and more of the workforce into superfluous service sector employment.

2) The per capita level of quality and quantity of content of market-baskets, for both households' and producers' goods, must correlate with the level of technology, and must increase with advances in technology.

For example, the per capita availability of high-technology machines, instruments, and scientific equipment for industrial investment as well as for education and research purposes, must increase dramatically over the next 10 years. Tomorrow's children must grow up with lasers, superconductors, plasma devices, and biophysics—just as today's generation is growing up with computers.

3) With technological progress, the ratio of rural to urban employment of operatives must decline "asymptotically" toward a certain minimum value, subject to the condition that the output of agriculture must increase per capita of the population as a whole.

Housing and infrastructure of existing cities must be modernized, with emphasis on the latest technologies in rapid mass transit and distribution of goods. Industries, and above all capital goods industries, should for the most part be concentrated in such well-functioning cities, making the most efficient use of infrastructure. Rather than expand existing big cities beyond their infrastructural optimum, it is better to build new, modern cities of medium size (i.e. Cusa City, Leibniz City, etc). At the same time, an end must be put to the deliberate destruction of agriculture and associated agro-industry in the European Community as a result of manipulated "free market" policies.

4) The ratio of employment of operatives in production of producers' goods must increase relative to employment in production of households' goods, subject to the condition that the per capita household market-basket is improved.

The F.R.G. economy is already oriented toward production of capital goods incorporating the latest advances in science and technology. This characteristic will become ever more pronounced in the course of the next 5-10 years, and will extend to the entire central triangle as the economies of East Germany and Czechoslovakia are modernized. The orientation toward advanced capital-goods production demands continual improvement in the levels of cultural, education, and living conditions, at low relative cost relative to the total labor input into the economy.

5) The per capita throughput of usable energy must increase.

"Usable energy" excludes losses in transmission due to breakdowns or use of inefficient equipment; these losses are currently very high in the eastern portion of the triangle (G.D.R. and Czechoslovakia). Major investments in energy systems must be implemented to attain in real terms the F.R.G. figures of 739 watts per capita of usable electricity production and a total final energy consumption of 4,300 kg SKE per capita. The projected technological parameters of the next half-century include an increase of more than an order of magnitude in per capita energy throughput, mainly as a result of increasing energy-intensity of industry and infrastructure.

6) The energy-flux density of prevailing forms of energy, must increase.

Not only the nominal quantity, but also the quality of energy must increase as a function of technological advance. This can be measured as an increase in the number of watts per square meter flowing through critical surfaces of generation or application of energy. For example, modern nuclear energy plants have an energy-flux density approximately an order of magnitude higher than fossil fuel plants. The technological parameters of the next decade dictate that what we call "thermal energy" (i.e., heat) must be replaced to an increasing degree by coherent forms of electromagnetic radiation, as typified by use of lasers in machine tools and chemical synthesis. In addition, classical fossil fuels must be increasingly replaced by synthetic fuels—especially hydrogen—providing a higher energy-flux density of combustion.

Density functions

The crucial areas for investment are determined by "density functions" defined in terms of energy throughput per capita, per square kilometer and per unit of potential population-density, energy-flux density of technology, and density of infrastructure.

Figure 3 shows a map of estimated energy-densities in kilowatts per square kilometer for the Central European region. Observe the maximum peak densities over the Ruhr area of Germany. Within a central core of this region, comprising 4,500 square kilometers (a radius of about 38 kilometers) and a population of about 5 million, the density of electricity consumption rises to 2.7 million watts per square kilometer—14 times higher than for the F.R.G. as a whole. At the same time, the Ruhr region has one of the highest densities of railroads, roads, inland shipping facilities, and pipelines in Europe. A similar situation obtains in the most productive industrial areas of Japan.

On the condition that an economy is operating according to the constraints outlined above, the achievement of maximum density of infrastructure and energy throughput translates into the following interrelated parameters:

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FIGURE 2

Development axes of the European triangle

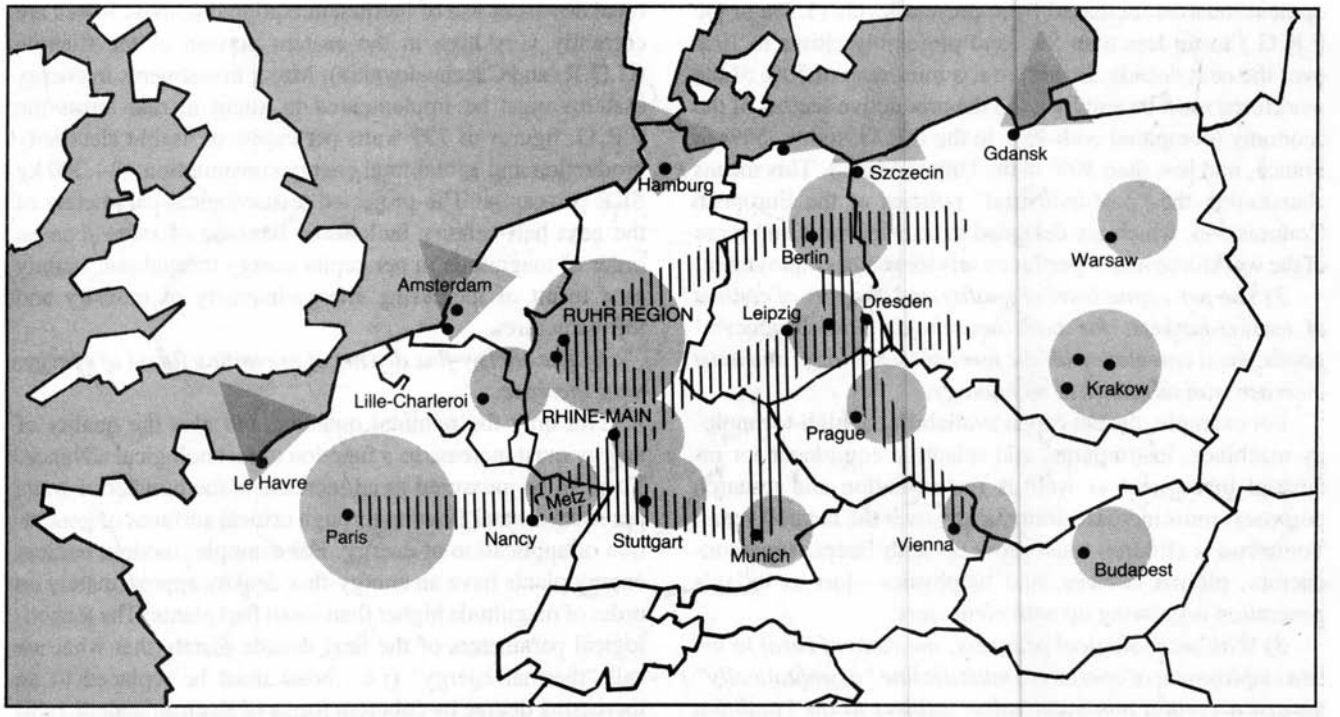


FIGURE 4

Proposed fast freight lines in the "triangle"

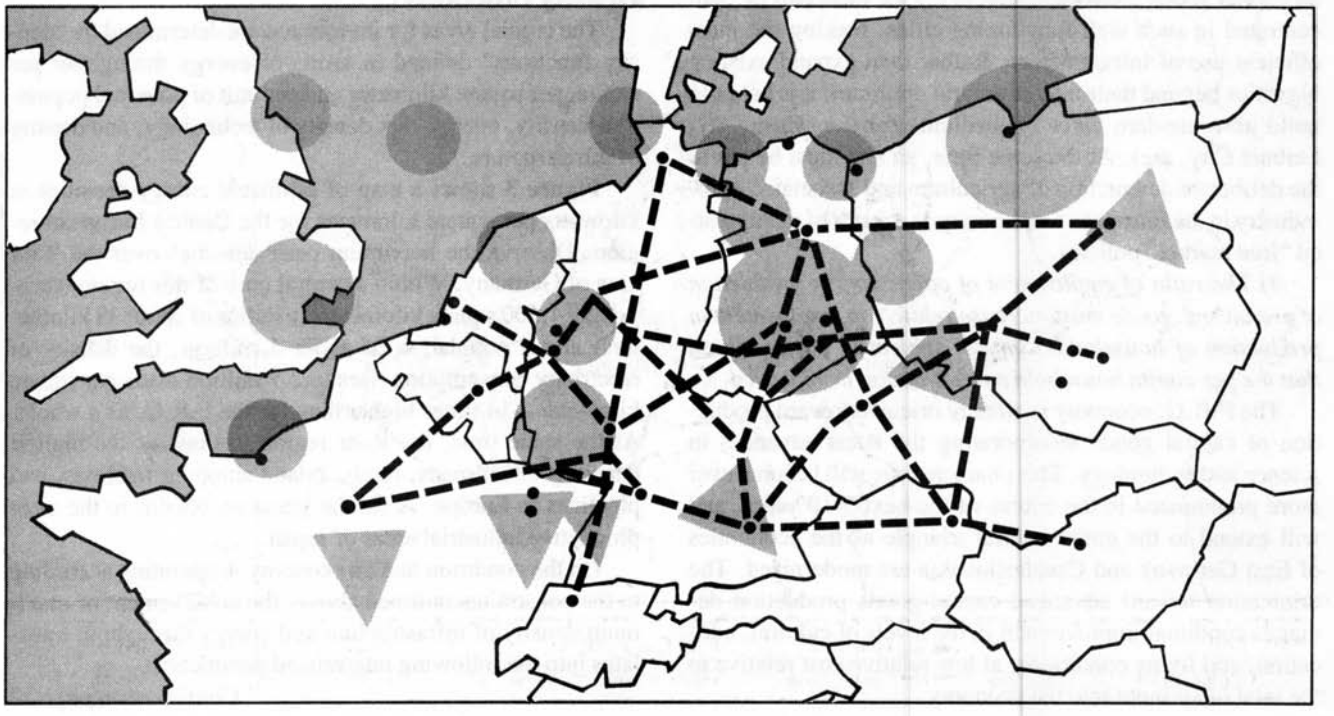


FIGURE 6
Proposed Central European river and canal system

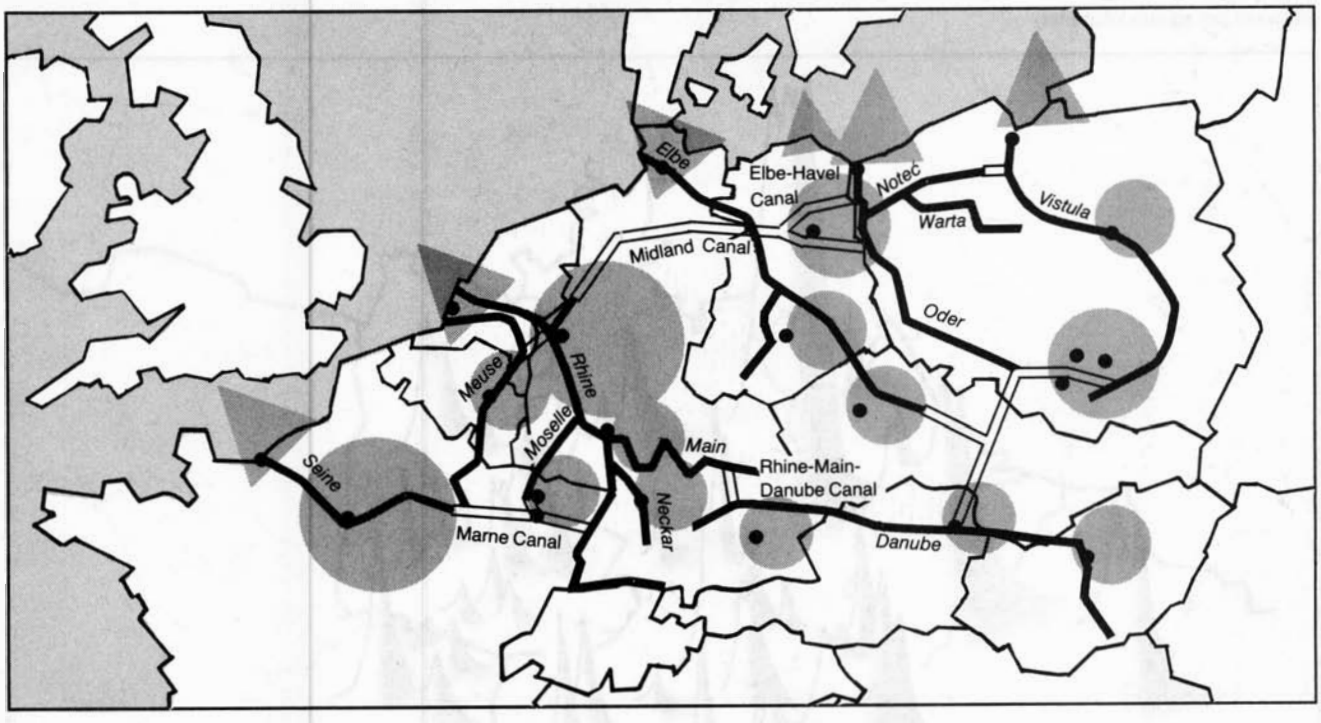


FIGURE 7
Oil and gas pipelines, with proposed HTGR nuclear reactors and gasification centers

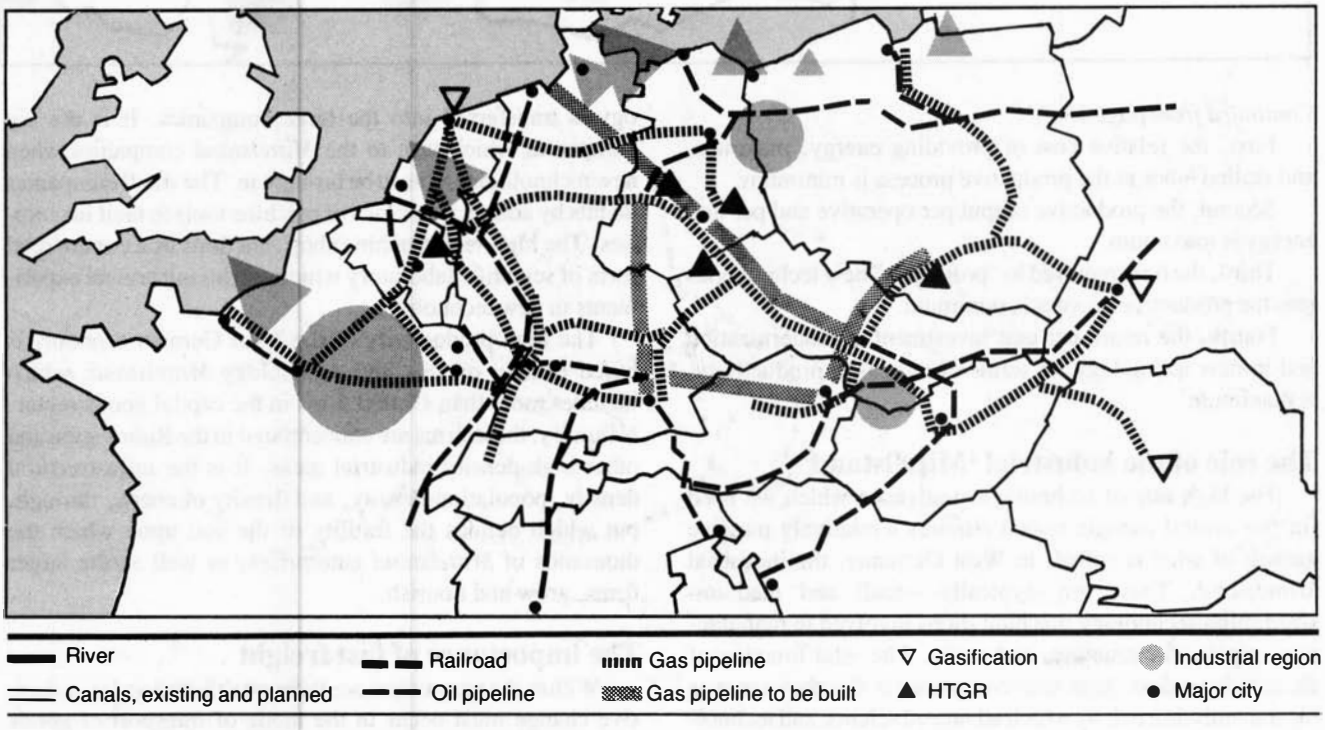
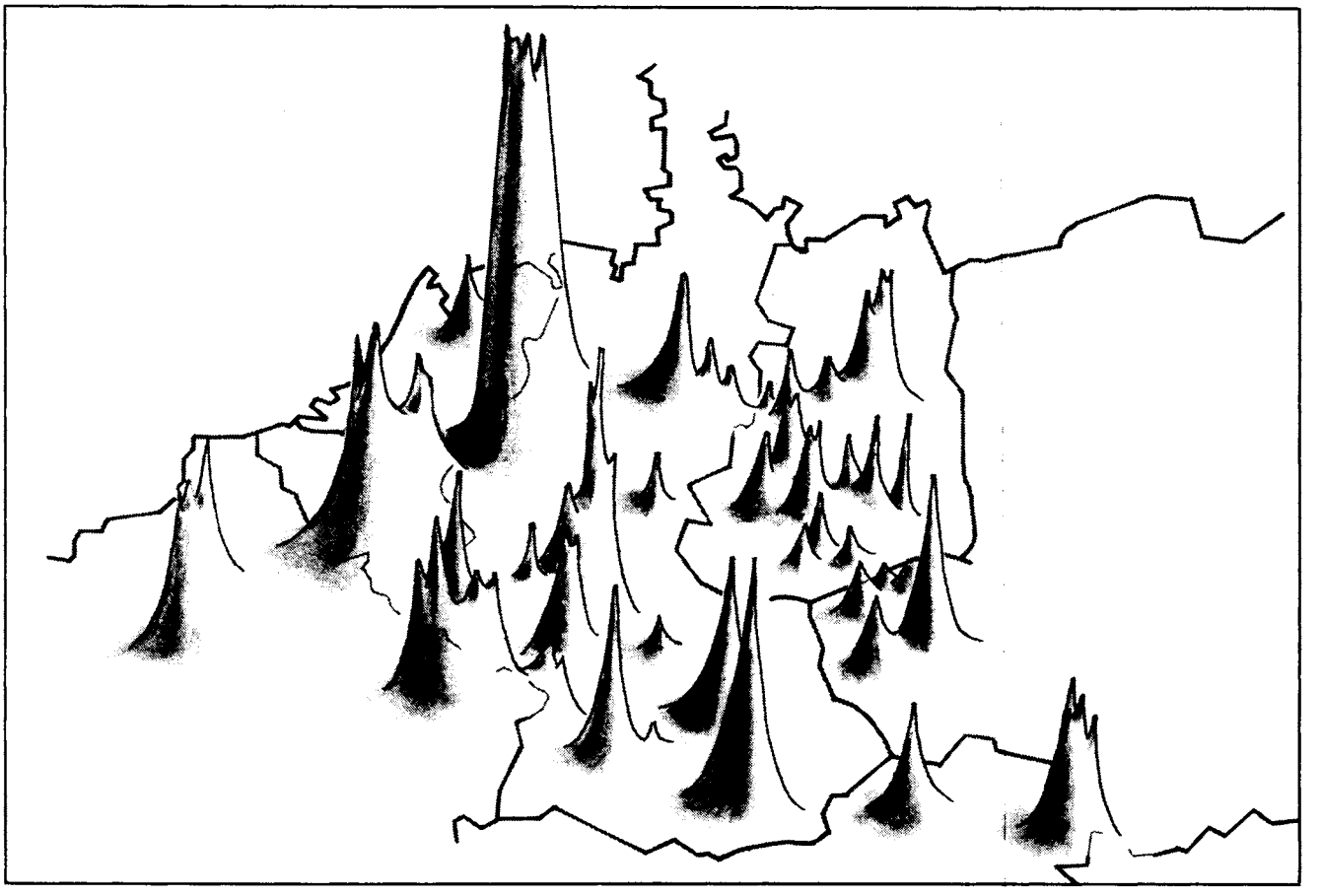


FIGURE 3
Estimated energy-densities in Central Europe
(kilowatts per square kilometer)



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First, the relative cost of providing energy, materials, and skilled labor to the productive process is minimum.

Second, the productive output per operative and per unit energy is maximum.

Third, the time required to "propagate" new technologies into the productive process is minimum.

Fourth, the return per unit investment in modernization and in new technology, in terms of increased productivity, is maximum.

The role of the industrial 'Mittelstand'

The high rate of technological advance which we need for our central triangle region requires a relatively massive growth of what is called, in West Germany, the industrial *Mittelstand*. These are—typically—small and medium-sized, high-technology machine shops involved in manufacture, repair, construction, and crafts. The vital function of these independent, high-tech companies is that they serve as the transmission belt by which advanced science and technology is transferred into the large companies. It is the big companies which turn to the *Mittelstand* companies when new technologies have to be brought in. The small companies do this by adding new kinds of machine tools to their inventories. The high-tech machine shop functions as a commercial form of scientific laboratory which carries out crucial experiments in new technology.

The high productivity of the West German economy is based exactly on this high-technology *Mittelstand,* which includes more than 16,000 firms in the capital goods sector. Naturally, these firms are concentrated in the Ruhr region and other high-density industrial areas. It is the infrastructural density, population-density, and density of energy throughput which defines the fertility of the soil upon which the thousands of *Mittelstand* enterprises, as well as the larger firms, grow and flourish.

The importance of fast freight

Within the parameters we have established so far, a decisive change must occur in the mode of transport of goods

within the triangle. The situation of the F.R.G. exemplifies the reason.

Of the 3.2 billion tons of freight transported in the F.R.G. every year, for a total of 255 billion ton-kilometers, approximately 85% are "bulk goods" such as coal, oil, grain, ores, cement, steel mill products, bulk chemicals, etc. Excluding short-haul truck transport to and from loading facilities, the majority of these bulk goods are moved by rail and inland shipping, which are far cheaper per ton-kilometer for these sorts of goods. Where possible, those goods with the least value per ton—such as stone and gravel—are moved by inland waterways, which have the lowest transport cost per ton-kilometer, but also the longest transport times. For such bulk goods, the transport costs are liable to make up a sizable portion of the total cost on delivery; since the transport time is generally not critical, the cheapest mode of conveyance is chosen. Over the next 5-10 years, the quantity of bulk goods to be transported within the "triangle" may increase by as much as 100%. This requires upgrading the central European river and canal system, as well as existing rail connections, in the manner described below.

The situation with the remaining 15% of goods—semi-finished and finished goods—is different. High-technology capital goods, in particular, constitute many orders of magnitude greater value per ton to the economy. Not only is the cost of transport generally only a small fraction of the production cost, but the aggregate time and quantity of such goods located either in transport or storage, rather than in use, is a significant cost to the economy. As the rate of technological development increases, another factor becomes decisive: The time required to obtain the newest instruments and equipment becomes an ever more important limiting factor for how rapidly high-technology projects can proceed. This is most evident in such areas as space technology which require an elaborate division of labor among dozens or even hundreds of independent firms and scientific institutes. These considerations apply most emphatically to the high-technology *Mittelstand* whose role we described above.

This is why a massive improvement of fast-freight capabilities is the single most essential factor in transforming our Paris-Berlin-Vienna triangle into the high-technology capital goods center of the world.

In the F.R.G. the expansion of fast freight over the past 15 years has been achieved almost entirely by long-haul trucking. More than 72% of all finished and semi-finished goods are now transported in this way, even though long-distance trucking is intrinsically far more costly in energy and labor compared to rail transport between points serviced by both. A limit is rapidly being reached, however, beyond which further expansion of long-haul trucking is no longer possible, even on the excellent road system existing in the West German part of the "triangle." Meanwhile, the amount of high-quality capital goods to be moved within the central region will grow nearly exponentially over the next 10-20 years. For these and other reasons, a different answer must be found.

The key to the solution lies in the density functions discussed above. Over 80% of the energy-density and infrastructure density of the "triangle" is concentrated in 10 great industrial areas and along the transport corridors connecting those centers. This means that the cheapest and most efficient solution is high-speed rail transport between a limited number of centers, connecting to short-haul trucking to cover the areas around the rail nodes. To replace long-haul trucking, however, the delivery times for a fast-rail system must be reduced from the present container-transport times of up to several weeks, down to mere hours.

We now examine the infrastructure requirements of the region in greater detail.

Transport infrastructure for the 'triangle'

The key to development of the region is a massive upgrading of the railroads with emphasis on rapid, computerized container transport of freight. What is required is an integrated system of fast freight trains, loading and unloading facilities, and short-haul trucking. The system must be capable of handling 250-300 million tons yearly of (mainly) finished and semi-finished goods with a door-to-door delivery time of 36 hours or less between points within the major industrial centers.

The key fast freight lines are indicated in **Figure 4.** These lines are to be constructed so as to permit routine operation at speeds of 140-160 kilometers per hour. Thus, a fast freight train leaving from Paris to Vienna should arrive in less than 12 hours. The essential requirement is the highest quality of track construction, and a minimum of stops and waits between the centers.

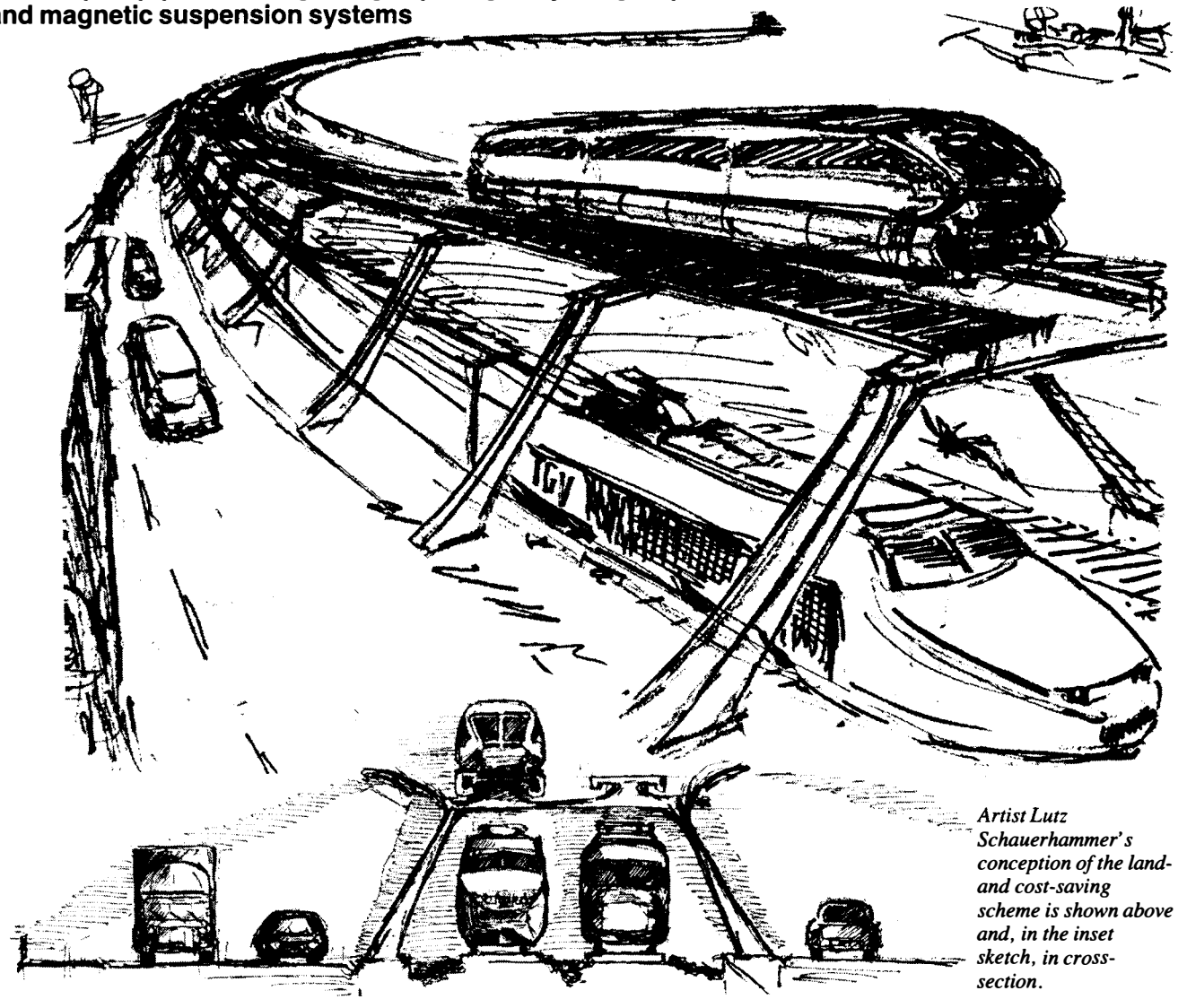
The majority of these lines belong to already existing rail corridors, and require mainly an upgrading of existing tracks to take the higher velocities and load factors. Much of this work can be accomplished rapidly using semiautomatic equipment already standard in the business.

Essential to the functioning of the system is the establishment of computerized container-loading facilities on the outskirts of the major industrial centers. At these nodes the rapid point-to-point rail transport connects to the surface-covering capability of modern trucking and local rail systems. The container-transfer process must be automated and exceedingly rapid; a large center may have as much as 20,000 tons of fast freight moving in and out every day, with freight trains arriving every 60 minutes or less.

Passenger transport between industrial centers shall be mainly by high-speed ground transportation at velocities between 250 and 500 kilometers per hour. Travel time between any two major centers in the triangle shall be reduced to a maximum of 3½ hours. The TGV-ICE and magnetic levitation systems provide the necessary technology. In a first stage, fast passenger and fast freight

FIGURE 5

A 'transport pipeline' integrating superhighways, high-speed trains, and magnetic suspension systems



Artist Lutz Schauerhammer's conception of the land- and cost-saving scheme is shown above and, in the inset sketch, in cross-section.

will use much of the same track in a dual-purpose mode. As the fast freight load increases, passenger transport will progressively be moved off those lines, allowing them to be used for freight only. With the separation of passengers and freight, an increasing portion of passenger transport will be taken up by magnetic levitation systems operating at the highest velocities.

High-speed long-distance ground transportation will be integrated with modern rapid transit networks within the urban centers in such a way, that door-to-door travel times will be less than, or not significantly longer than, air travel between the same points today.

New superhighways should be integrated with fast rail lines and magnetic suspension systems in "transport pipelines" making the optimum use of precious land area and savings in construction time and cost (**Figure 5**).

For the efficient transport of bulk goods (such as raw materials, steel, chemicals, grain, etc.) the following infrastructural improvements are required:

I. Modernization of existing medium-speed rail systems, including a total overhaul of the systems in G.D.R. and northern Czechoslovakia. Emphasis is to be placed upon renewing East-West rail connections which were disrupted by the division of Europe, including emphatically the corridors running from the northern Ruhr region via Braunschweig to Berlin, via Kassel-Göttingen-Nordheim into Leipzig, and further to the south from Frankfurt via Erfurt. In addition, attention should be given to the direction Munich-Prague and Vienna-Prague.

II. Completion and improvement of the Central European

river and canal system to make it fully usable by 1,350-ton Europa-class ships (**Figure 6**). Once the long-planned Elbe-Danube connection is constructed, the center of this system will form a closed ring: It will run from the Ruhr region via the Midland canal to Magdeburg and Berlin; via Magdeburg on the Elbe southward via the planned Elbe-Oder-Danube canal, with connection to Prague on the Moldau, to Bratislava; then up the Danube via Vienna connecting to the Rhine-Main-Danube canal near Regensburg, continuing on the Main down to Frankfurt, and from there down the Rhine back to the Ruhr region.

Huge flows of materials will circulate in this ring of waterways, like a giant whirlpool, with arms spinning out to the harbors of Amsterdam-Antwerp, Bremerhaven, Hamburg, and Rostock; via the Oder, Notec, and Vistula into Poland, via the Danube to Budapest; on the Rhine up to Basel; on canals and via the Mosel to Alsace-Lorraine; and via the Rhine-Marne canal through to Paris and from there to Le Havre.

Energy infrastructure

Cheap and plentiful energy—above all electricity—is the second key to an "economic miracle" in the Paris-Berlin-Vienna triangle. The model to be followed is France's nuclear energy program as originally planned under Charles de Gaulle. Not only does nuclear energy provide France with electricity at half the cost of alternative sources, but its use can eliminate the terrible pollution caused by heavy use of brown coal in the G.D.R. and other East bloc countries.

Based upon raising per capita energy levels to a value slightly above the present F.R.G. values, an installed electric generation capacity of approximately 120 GWe is required for the central triangle.

The most urgent task is to rebuild the energy systems of the eastern side of the triangle, i.e. the G.D.R. and western Czechoslovakia. For this purpose, beyond immediate measures to modernize coal power plants which still have useful life, nuclear energy is the only viable solution. Construction of an additional 6 GWe of nuclear power in the G.D.R., and 4 GWe in western Czechoslovakia should be begun as soon as possible.

For a variety of reasons, the high temperature gas cooled reactor (HTGR) is the most attractive design for the eastern and central areas of the triangle. This reactor type is intrinsically the safest in existence—it shuts itself down by physical mechanisms and is incapable of producing a "meltdown." HTGR modules of about 150 MWe can be produced in assembly-line fashion and installed in 27 months or less. They can provide high-temperature industrial process heat as well as electricity and lower-temperature heat for district heating. Their inherent safety characteristics permit them to be installed directly inside urban industrial centers.

Moreover, the HTGR provides the key to efficient and pollution-free exploitation of the brown coalfields of the G.D.R., Czechoslovakia, and the Ruhr region. The basic technology is available for using HTGR process heat to produce synthetic natural gas by gasification of brown coal. HTGR centers should be located in the coalfields, where they can use the dense energy infrastructure already existing there. These centers will feed large quantities of synthetic natural gas into the system—helping to reduce import dependency—and provide electricity now produced by the giant brown coal combustion plants. Production of liquid fuels by nuclear process-heat liquefication of coal is also possible.

The technical quality of the electricity grids in the G.D.R. and Czechoslovakia must be upgraded to permit their integration with the West European system. In addition, the dependency upon Soviet oil and natural gas should be reduced, in part by a series of additions and changes in the pipeline systems permitting gas and oil to be pumped into the eastern side of the triangle from the west (**Figure 7**).

Communications

Modernization of telecommunications systems in the G.D.R. and western Czechoslovakia must proceed at the highest technical standards required by the central triangle as the world's most advanced industrial region of the year 2000 and beyond. The logical step is to go directly to the digitized radiotelephone system already projected for Western Europe ("D-system"). Within five years or so, people will be able to communicate with each other anywhere in central Europe, without interruption: at home, at work, in automobiles and trains.

The same system must provide data-links for rapid access to scientific information. There is no way the present library systems in central Europe could satisfy the demands which will arise when 5-10% of the labor force is engaged in scientific research and development. The entire existing literature, from the classics to the latest books and periodicals, must be made electronically accessible, from the schoolroom, home, and workplace. The technical means now exist to accomplish this, an accomplishment which will contribute greatly toward raising standards of education at all levels.

Final notes

This outline only contains the bare essentials of a program for infrastructural development of the "Paris-Berlin-Vienna Triangle." Many important questions could not be touched upon here, such as the necessary credit measures, the implications for development of Poland and other nations, or how to revive the great European centers of learning as part of a scientific and cultural renaissance. These and other points will be addressed in other locations. Our purpose here is to provide a "lexicon" for future discussions, and a common basis of understanding for what must be done to put the world once more on the track toward peace and prosperity.